2015

Relationship between Attribute Variables and First-Year Physician Assistant Students' Ratings of Professional Attire

Jaclyn Demeter
Butler University

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Intended date of commencement May 9, 2015

Read, approved, and signed by:

Thesis adviser(s) Dr. Mike Roscoe — Date 4/23/15

Reader(s) Don Frosch — Date 4/23/15

Certified by Judith Harper Morrel, Director, Honors Program — Date 5/18/15

For Honors Program use:

Level of Honors conferred: University Summa Cum Laude

Departmental Highest Honors in Health Sciences

Relationship between Attribute Variables and First-Year Physician Assistant Students' Ratings of Professional Attire

A Thesis Presented to

The College of Pharmacy and Health Sciences

and

The Honors Program of Butler University

In Partial Fulfillment of the Requirements for Graduation Honors

Jaclyn Demeter

April 20, 2015

Acknowledgements:

I must thank Dr. Mike Roscoe and Professor Don Frosch for their assistance and guidance on this thesis. They were an integral part of reviewing, editing, analyzing data, re-editing, and supporting me throughout this project.

Relationship between Attribute Variables and First-Year Physician Assistant Students' Ratings of Professional Attire

Jaclyn Demeter

Butler University College of Pharmacy and Health Sciences

ABSTRACT

Objective. The purpose of this survey study was to investigate the non-causal relationships between various attribute variables of first year PA students (age, gender, ethnicity, education level, family income, and professional phase GPA) and their professionalism ratings of photos of three different outfits depicting each of five categories of attire (scrubs, casual, business casual, business, and white coat) worn in clinical settings.

Methods. An observational ecological design was utilized to measure students' perceptions of professional attire. First-year physician assistant students from Butler University in Indianapolis, Indiana were asked to rank outfits from 1= unprofessional to 7= professional using a semantic differential scale. Items were analyzed both for relationships between attribute variables and students' ratings of professional attire, and for mean intragroup differences in professionalism ratings for each dichotomized attribute variable.

Results. No significant bivariate correlations were found between any attribute variable and the mean professionalism rating for any of the five types of attire. After attribute variables were dichotomized, isolated significant intragroup mean differences were found for: age and casual clothing outfit #3 [$t(45) = -2.176$,

p=.035]; age and white coat outfit #1 [t(32.79) =2.138, p=.040]; ethnicity and business outfit #1 [t(40) =-2.619, p= 0.12]; ethnicity and white coat outfit #3 [t(40)= -5.234, p= .000]; GPA and business casual outfit #2 [t(45) =2.148, p=.037]; and GPA and white coat outfit #1 [t(44.135) =2.093, p=.042]. Two-variable chi square tests of independence revealed a significant relationship between trichotomized professionalism ratings for mean business casual attire and dichotomized educational level [x^2 (1,n=47) = 3.855, p=.05]. No full multiple regression models (using dichotomized attribute variables as predictors and mean professionalism ratings for each attire type as criterion variables) reached statistical significance.

Conclusions. While there were isolated mean intragroup differences and relationships that reached statistical significance, no single variable demonstrated statistical significance across all three outfits pictured for each type of attire.

LITERATURE REVIEW

Much debate surrounding physician attire has stemmed from the concern for spread of infection via clothing surfaces such as white coats, ties, and long sleeve shirts. Results of research investigating the contribution of clothing to the spread of bacteria within hospital and clinical settings have led to dress code guideline modifications in some hospitals.[1,2] This "dressing down" (elimination of providers neck ties, white coats, long sleeves) leading to a traditionally "unprofessional" appearance, has created new research opportunities into the perception of professional attire among patients. Furthermore, these dress code changes have

extended into academia and the training of new medical providers. This leads to the questions of what attire appropriately portrays professionalism.

Each year as an induction into schooling of the medical profession, many graduate students partake in the infamous "white coat ceremony." This ceremony marks the beginning of an individual's journey into medical education. The white coat has been a hallmark of the medical profession since the 19th century to give a cloak of scientific validity and as a symbol of purity and cleanliness—qualities admired in a healer.[3] Even Hippocrates's advised that physicians should "be clean in person, well-dressed, and anointed with sweet smelling unguents."[4] Along with the ritual of the reciting of Hippocratic Oath, the tradition of wearing the universal symbol of the white coat lives on today. The influence of wearing the white coat can be attributed to its use over time and the recognition of the white coat as a brand label of the medical profession.[5]

Therefore, it is not surprising that patients prefer a practitioner in a white coat.[6,7,8] In both hospitals and private practice, patients had the most confidence in a physician wearing a professional white coat.[8] Although risk of infection is a prominent argument for the removal of the white coat in medical settings, information regarding the risk of coat-carrying infection did not influence survey respondents' opinions regarding the white coat.[7] In fact, 86.9% of patients still felt comfortable with a doctor wearing a white coat even if bearing the risk of infection.[7] Thus these studies show that the patients' perception of the physician's attire outweighs other variables that contribute to patient confidence.

However, there are studies that contradict these findings. There are other variables that also contribute to a successful relationship with a patient such as behavior, knowledge, hygiene, compassion, politeness, and cleanliness. When accounting for these other factors, it was found that the white coat was not the preferred physician attire.[9,10] In fact, patients felt that the doctor's appearance was not as important as compassion, politeness, and knowledge.[10] And when patients had to choose the preferable dress for the doctors in a clinic, smart casual, defined as conforming with 'bare below the elbows', was ranked the highest.[10] When professional integrity was defined as "the ability of the healthcare provider to be worthy of trust, have concern for other and have a substantial commitment to the patient," 49% of respondents were neutral regarding if a dental student should wear a white laboratory coat rather than surgical scrubs.[9] Although no specific external variables contributed to this opinion, the preference for the white coat had decreased.

Another consideration of the perception of the white coat is the age of the respondent. In a pediatric dentist setting, parents favored professional dress while the children ranging from 4-15 with a mean age of 9.8 years preferred dental students in casual attire while the adult patients 23-60 with a mean age of 40.4 years preferred the white coat.[11] Yet in a different study, children 7-11 years old (mean age of 9.6 years) preferred the physician with a white coat.[8] In the same study, teenagers defined as 11-17 years old (mean age of 14 years) also preferred professional dress. When physician attitudes on professional attire were measured, older physicians favored professional appearance more than younger physicians.[12]

Nonetheless, first impressions and bias still apply. It has been determined that perception of basic intelligence and academic performance are affected by dress.[13] This is not a new phenomenon as a 1985 study showed that models who were dressed attractively received high ratings on task performance than the less attractively dressed models.[14] In a study of high school teachers and students, intelligence was judged to be highest in the dressy look, defined as suit and tie in men and plaid suit and heels in women.[13] The "hood look," defined as jeans and a t-shirt, received the lowest intelligence scores.[13] Although a suit is rarely worn by a traditional high school student, this attire was link to higher academic achievement perhaps because our culture believes this type of dress is critical for success in the workplace.

While dressy or professional attire linked to viewer perception of confidence and intelligence is evident in most settings, the question remains: does attire truly affect performance? Psychologists Adam and Galinsky coined the term "enclothed cognition" to describe the "systematic influence that clothes have on the wearer's psychological processes."[15] This phenomenon suggests that simply wearing certain clothing causes individuals to embody the associated abstract concepts and symbolic meaning of the clothes. For example, a lab coat signifies scientific focus and an emphasis on concentration while being careful and attentive. It was determined that physically wearing a lab coat increased selective attention compared to not wearing a lab coat.[15] In fact, participants wearing the lab coat made approximately half as many errors as individuals not wearing the lab coat. Additionally, when individuals wore a lab coat described as a doctor's coat

compared to a coat described as a painter's coat, they had increased sustained attention on tasks.[15] This research supports that clothes do indeed have systematic psychological and behavioral consequences for their wearers.[15]

Evidently, attire has the ability to effect the perception of the viewer and the behavior of the wearer. We are not aware of any studies that investigate academic performance and other attribute variables in relation to one's perception regarding the suitability of various types of attire in clinical settings. If we better understand the factors that affect student perceptions of what is or is not appropriate attire in the clinical setting, we may be able to proactively identify students who may dress inappropriately on their upcoming clinical rotations. This may help avoid future student professionalism issues regarding inappropriate attire in clinical settings. Therefore, we seek to answer the research question, " Is there a relationship between various attribute variables (age, gender, ethnicity, education level, family income, and professional-phase GPA) of first-year Butler University PA students and their professionalism ratings of photos depicting various types of attire (scrubs, casual, business casual, business, and white-coat)?"

The purpose of this study was to investigate the non-causal relationships between various attribute variables (age, gender, ethnicity, education level, family income, and professional-phase GPA) of first year PA students and their professionalism ratings for various types of attire that might be worn in clinical settings.

The specific aims of this study were to: 1) explore the bivariate correlations between each attribute variable (age, gender, ethnicity, educational level, family

income, and professional phase GPA) and professionalism ratings for each type of attire; 2) investigate intra-group differences in mean professionalism ratings for each type of attire after dichotomizing each attribute variable; 3) perform two-variable chi-square tests of independence to determine, for each attire type, whether the aforementioned attribute variables (when dichotomously categorized) and professionalism ratings (when trichotomously categorized as 1-2, 3-5, 6-7) are related to one another (i.e., are not independent) or are not related to one another (i.e., are independent); and 4) perform multiple regression analyses in an attempt to predict one's professionalism ratings for each type of attire based on one's age, gender, ethnicity, educational level, family income and professional phase GPA

I hypothesize the following:

1) There will be a significant bivariate relationship between the attribute variables of age, education level, family income, and professional phase GPA, and the mean professionalism ratings for each type of attire, but not for the variables of gender and ethnicity.
2) After attribute variables are dichotomized, significant intragroup mean differences will be found for age, education level, family income, and professional phase GPA, and the mean professionalism ratings for each type of attire, but not for the variables of gender and ethnicity.
3) Two-variable chi square tests of independence will reveal a significant relationship between trichotomized professionalism ratings for casual, business casual, business, and white coat attire, and the dichotomized

variables of age, education level, family income, and professional phase GPA.

4) Full multiple regression models (using dichotomized attribute variables as predictors) will predict mean professionalism ratings for each type of attire better than chance alone.

METHODS

Study Design. A survey method (ecologic design) that employed a 7-point semantic differential responses was utilized to determine students' perceptions regarding how professionally they rate 6 different categories of attire.

Subjects. The source population for this study was first-year physician assistant students (inclusion criteria) from Butler University (N=50). The sample population was 47 of 50 students. The 3 students not included in the study elected not to participate. Demographic data were collected and evaluated **(Table 1)**.

Confidentiality/Protection of Human Rights. Exempt approval was applied for and received from the Butler University Institutional Review Board **(Appendix A).**

Procedures. Data were collected using an electronically administered online survey using SurveyMonkey® to the first year PA students during class time. Each respondent's survey was linked to his or her student ID number. The student researcher was blinded to participants' ID numbers and names. Responses from SurveyMonkey® were downloaded into an Excel spreadsheet and subsequently downloaded into an SPSS datasheet. At no point did the student researcher have access to information that could link participants' names with their attribute variables

or GPAs. To protect the confidentiality of participants, only the faculty mentor had the key that could be used to link student names with the student ID numbers.

The survey's semantic differential response scales ranged from 1 to 7, with 1 being "unprofessional" and 7 being "professional." Students were asked to rank photos of each of the three outfits in each attire category (scrubs, casual, business casual, business, and white coat), from unprofessional to professional, based on their opinion. Therefore, each student viewed and rated 15 photos **(Figure 1)**. The three photos in each category were selected using face validity, as determined by faculty mentors and professional phase students.

To simplify statistical analyses, each of the attribute variables was dichotomized as follows: income (less than $100,000, greater than $100,000); age (21 or younger, 22 or older); college degree (college degree, no college degree); ethnicity (Caucasian, non-Caucasian); gender (female, male); and GPA (under 3.5, 3.5 or higher).

Statistical Treatment of Data. SPSS statistical software (version 22) was used to analyze data. Two-tailed (non-directional) bivariate correlations, independent *t* tests, multiple regressional analyses, and two-variable chi-square analyses were performed using a .05 alpha level of significance.

Operationalization of Variables. The following are the operational definitions utilized in this study. "Professionalism" is defined as perceptions of professional attire, based upon the semantic differential responses. The variation in professionalism will be displayed by the five outfit categories: scrubs, casual, business casual, business and white coat. "Scrubs" are defined as wearing scrub top

and bottoms that match in color along with tennis shoes. "Casual" attire consists of sweat pants, t-shirts, or sweatshirts with tennis shoes or flip-flops. "Business casual" attire is defined as slacks with blouse or collared shirt and dress shoes. "Business" attire is defined as slacks or business skirt with coordinating top and blazer jacket, tie for men, and dress shoes. "White coat" attire is operationalized as business dress with official white coat over. "Academic performance" is operationalized based upon the student's transcript verified GPA at the end of their first didactic year.

RESULTS

No significant bivariate correlations between any of the attribute variables and the mean professionalism ratings from each different type of attire were found **(Table 2)**.

Independent *t* tests were performed comparing numerous possible mean differences. Out of 120 possible mean differences (resulting from 6 dichotomized variables x 5 types of attire x 3 different photos for each type of attire plus a mean value for each category), only six reached statistical significance **(Table 3)**. Only white coat outfit #1 had more than one significant comparison. Three of the attribute variables had two significant comparisons; age, ethnicity and GPA. After attribute variables were dichotomized, isolated significant intragroup mean differences were found for: age and casual clothing outfit #3 [$t(45)= -2.176$, $p=.035$]; age and white coat outfit #1 [$t(32.79) =2.138$, $p=.040$]; ethnicity and business outfit #1 [$t(40)= -2.619$, $p=0.12$]; ethnicity and white coat outfit #3 [$t(40)= -5.234$, $p=.000$]; GPA and business casual outfit #2 [$t(45)= 2.148$, $p=.037$]; and GPA and white coat outfit #1

[t(44.135)= 2.093, p=.042]. The only dichotomized demographic variables that had significant values when compared to categories of clothing using the t test were age, ethnicity, and GPA. Within the age test for casual outfit #3, students 21 years old and younger assigned a lower score of professionalisrn (mean = 1.29) to the outfit compared to students 22 and older (mean = 1.69). Students 21 years and younger rated white coat outfit #1 higher (mean = 6.45) than students 22 years and older (mean = 6.06). In the variable of ethnicity, business outfit #1 was rated lower by Caucasian students (mean = 6.85) than non-Caucasian students (mean = 7.00). Again, the white coat outfit #3 was ranked lower by Caucasian students (mean 6.51) than non-Caucasian students (mean = 7.00). Again when regarding GPA, white coat outfit #1 was ranked lower by students with a GPA over 3.5 (mean = 6.13) compared to students with a GPA under 3.5 (mean = 6.5). Also, business casual outfit #2 was rated lower by students with a GPA over 3.5 (mean = 4.39) compared to students with a GPA under 3.5 (mean = 5.04).

Next, the semantic differential mean professionalism ratings for the five clothing domains were trichotomously categorized as "low" (ratings of 1-2), "medium" (ratings of 3-5), or "high" (ratings of 6-7). Two-variable chi-square tests of independence were then performed to determine whether or not professionalism ratings and dichotomously categorized attribute variables were related. Chi-square analyses were only done for the mean of the three scores for each type of attire, for 5 total analyses **(Table 4)**. The 2-variable chi square tests revealed a significant relationship between mean business casual attire and educational level [x^2 (1,n=47) =3.855, p=.05]. No single value lead to this significance, but no individuals with

college degrees rated the business casual as "high" which resulted in a standard residual of -1.5. All responses in the business dress domain were rated as "high" which was the highest scoring domain.

None of the full multiple regression models (using dichotomized attribute variables as predictors, and mean professionalism ratings for each attire type as criterion variables) reached statistical significance.

DISCUSSION

Non-significant findings. I hypothesized that a few of the attribute variables would correlate with a students' professionalism ratings of attire; however, this was not the case. Also contrary to my research hypotheses, there were only a few isolated statistically significant *t* test and chi square findings. My hypothesis that attribute variables could be used to predict students' professionalism ratings was also determined to be incorrect.

Statistially significant findings. Results of the *t* tests suggested that the older group of students perceived white pants to be a more casual (i.e., less professional) style of dress. Interestingly, the same outfit was worn in white coat outfit #3 and business outfit #1, with the exception of the white coat overlaying the black blazer. Therefore, it seems that the significance of the values may be derived, not from the category of clothing, but from the confounding variable of white pants. In both outfits, Caucasians perceived the white dress pants as less professional than their non-Caucasian peers. These positive findings seem to be attributed to the lighter colored pants (both khaki and white) instead of the level of professional attire

being assessed. Although specific photos in a few categories contained significant values, overall there was no significant consensus in any of the mean demographic variables.

Of further interest, professionalism ratings for the business category were all in the "high" (ratings of 6-7) range. Meanwhile the white coat category included four values in the "medium" (ratings of 4-5) range. The white coat category was hypothesized to be a more professional clothing choice; however, it received 4 values in a lower category than business dress which was hypothesized to be less professional.

Assumptions, Strengths and Limitations. This study assumed that, by using the majority of the first year class, this sample would be representative of the general PA student population. There is also an assumption that the operationalized clothing domains are different enough from each other and representative of all domains of professional attire.

Strengths of this study include the utilization of a wide variance of pictures to represent the different attire types within each category. It is also easily reproducible in other populations due to the survey method. Finally, it is one of few studies to attempt to address the perception of clothing on professionalism within PA students.

There are a few limitations to this study. The study sample and population are from one PA class within a specific program. This limits its external validity. There was also a non-homogenous distribution in the dichotomous attribute variables including gender, ethnicity, education, and age. This is a source of some of the significant findings in this study and is most likely from the uneven distribution in the

population size of 47. Finally, there is a concern of respondent bias (selecting certain clothing outfits) within students in a professional program, without a comparison group of non-students.

Recommendations for Future Studies. This survey could be administered to a wider population of physician assistant students across different locations and points of their education cycle. Additionally, administering the survey in a clinical setting to patients would provide a new audience with a different perspective while rating the professionalism of the outfits. The results could then be compared between patients and students to analyze for any differences. Another option would be to develop an experimental design study where students wear different clothing options (casual, business casual, business, white coat, and scrubs) while performing a standardized assessment (didactic and clinical) to evaluate the effects of clothing on academic performance.

CONCLUSIONS

No bivariate correlative relationships were found between the attribute variables studied and the mean professionalism ratings of five different types of attire. While there were a few statistically significant intragroup differences in professionalism ratings between the dichotomously categorized variables of age, ethnicity, and GPA, no single attribute variable in this study had a significant relationship with professionalism ratings throughout an entire attire category. The few isolated significant differences were likely attributable to specific articles of clothing—such as light colored pants. Only one statistically significant relationship

was found between trichotomized professionalism ratings for mean business casual attire and dichotomized educational level. Full multiple regression models using dichotomized attribute variables as predictors did not predict professionalism ratings of any of the five different types of attire better than chance alone.

Table 1: Study Attribute Variables

Variable	Dichotomized Groups				*p*-value*
Gender	Female	*n*=42 (89.4%)	Male	*n*=5 (10.6%)	.000
Ethnicity	Caucasian	*n*=41 (87.2%)	Non-Caucasian	*n*=6 (12.8%)	.000
Education	College degree	*n*=15 (31.9%)	No Degree	*n*=32 (68.1%)	.013
Age	<21 y.o	*n*=31 (66.0%)	>21 y.o	*n*=16 (34.0%)	.029
Income	$0-$100K	*n*=21 (44.7%)	> $100K	*n*=26 (55.3%)	.466
GPA	< 3.5	*n*=24 (51.1%)	>3.5	*n*=23 (48.9%)	.884

*Dichotomized group differences were analyzed using 1-variable chi-square "goodness of fit tests" using a .05 level of significance.

Table 2: Bivariate Correlation Matrix of Dichotomized Attribute Variables

		Gender	Ethnicity	Education	Income	Age	GPA
CM	Pearson Correlation	.069	.078	.085	-.106	.147	-.029
	Sig. (2-tailed)	.643	.604	.570	.476	.326	.844
	N	47	47	47	47	47	47
BCM	Pearson Correlation	-.089	.003	-.213	.076	-.149	-.217
	Sig. (2-tailed)	.553	.982	.150	.611	.318	.142
	N	47	47	47	47	47	47
BM	Pearson Correlation	.[b]	.[b]	.[b]	.[b]	.[b]	.[b]
	Sig. (2-tailed)	.	.	.	.	.	.
	N	47	47	47	47	47	47
WCM	Pearson Correlation	-.156	.171	-.100	.093	-.142	-.258
	Sig. (2-tailed)	.294	.249	.506	.536	.341	.080
	N	47	47	47	47	47	47
SM	Pearson Correlation	-.188	.152	-.054	.183	-.083	-.109
	Sig. (2-tailed)	.205	.308	.719	.218	.579	.465
	N	47	47	47	47	47	47

CM= casual mean, BCM= business casual mean, BM= business mean, WCM= white coat mean, SM= scrubs mean. Correlation is significant at the .05 level (2-tailed). b. Could not be computed because at least one of the variables is constant.

Table 3: Significance values (*p*-values) for *t* tests Performed for the Six Types of Attire Using Dichotomized Attribute Variables

Dress	Income	Age	College Degree	Ethnicity	Gender	GPA
C1	.995	.727	.771	.315	.629	.853
C2	.332	.925	.848	.669	.923	.404
C3	.355	**.035***	.187	.755	.509	.572
CM	.476	.326	.570	.604	.643	.844
BC1	.712	1.000	.703	.284	.246	.722
BC2	.160	.194	.089	.592	.255	**.037***
BC3	.958	.347	.213	.858	.572	.321
BCM	.611	.318	.150	.982	.553	.142
B1	.124	.388	.319	**.012***	.617	.957
B2	1.000	1.000	1.000	1.000	1.000	1.000
B3	.329	.333	.334	.363	.734	.328
BM	1.000	1.000	1.000	1.000	1.000	1.000
WC1	.421	**.040***	.059	.457	.234	**.042***
WC2	.546	.813	.977	.788	.502	.251
WC3	.975	.920	.839	**.000***	.483	.274
WCM	.536	.341	.506	.249	.294	.080
S1	.208	.935	.868	.324	.284	.570
S2	.255	.397	.428	.293	.364	.305
S3	.333	.536	.701	.531	.148	.692
SM	.218	.579	.719	.106	.205	.465

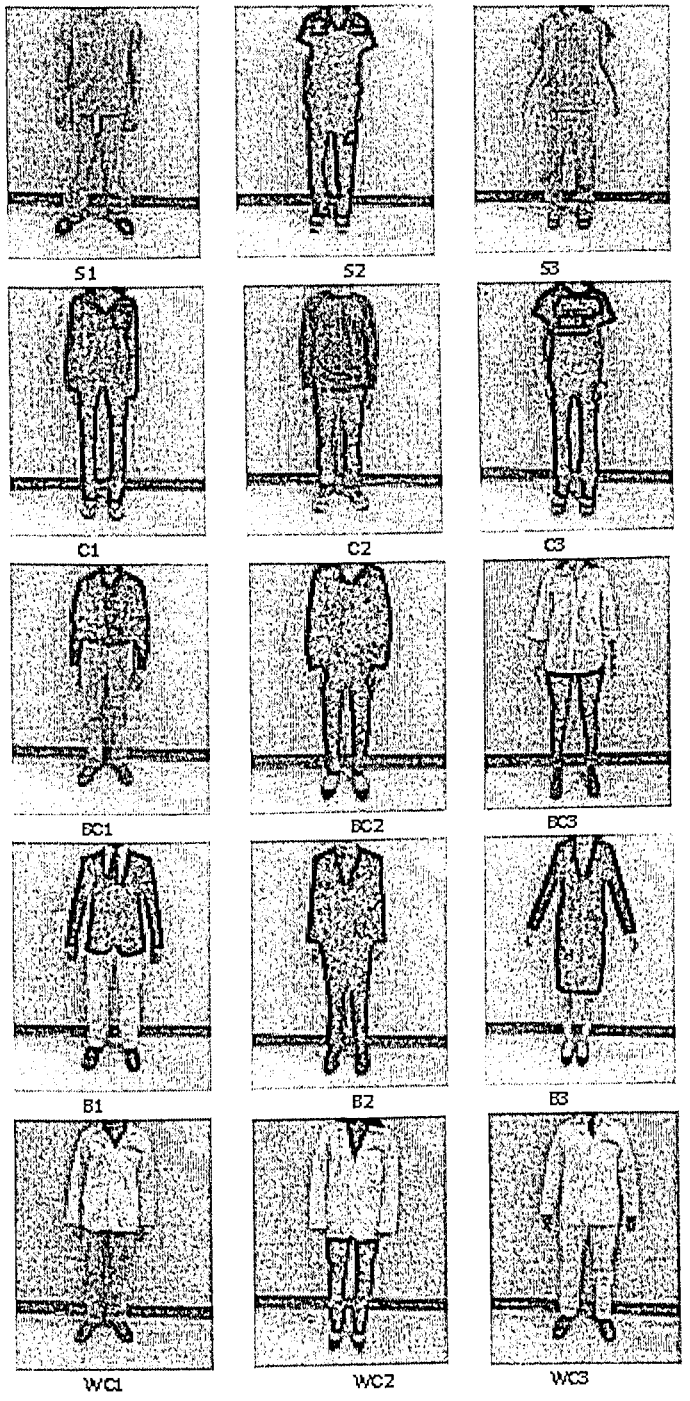
S=scrubs, C=casual, BC=business casual, B=business, WC=white coat, 1= the first image of each attire type, 2= the second image, 3= the third image, M= mean rating for that attire type. All tests were performed using 1-sample *t*-tests (2-tailed) at a .05 alpha level of significance. All significant findings are indicated with an asterisks and bold.

Table 4: Significance values (*p*-values) for Chi-square Tests Performed for the Six Types of Attire using Dichotomized Attribute Variables

Dress	Income	Age	College Degree	Ethnicity	Gender	GPA
CM	.877	.626	.575	.580	.618	.975
BCM	.916	.232	**.050***	.896	.734	.243
BM	-	-	-	-	-	-
WCM	.823	.481	.417	.424	.330	.276
SM	.183	.772	.944	.969	.483	.609

CM= casual mean, BCM= business casual mean, BM= business mean, WCM= white coat mean, SM= scrubs mean. BM were all ranged in the "high" category; therefore, a chi-square analysis was not computed since each value was a constant. All tests were performed using 1-sample *t*-tests (2-tailed) at a .05 alpha level of significance. All significant findings are indicated with an asterisks and bold.

Figure 1: Photos of Clothing Options



S=scrubs, C=casual, BC=business casual
B=business, WC=white coat

Appendix A: IRB Exempt Approval Letter

BUTLER UNIVERSITY

Institute for Research and Scholarship
4600 Sunset Avenue
Indianapolis, Indiana 46208-3485
(317) 940-9766
Fax: (317) 940-9074
E-mail: birs@butler.edu
Web: http://www.butler.edu/birs

INSTITUTIONAL REVIEW BOARD

DATE:	April 27, 2014
TO:	Ms. Jaclyn Demeter, Prof. Mike Roscoe
FROM:	Joel Martin Chair, Institutional Review Board
RE:	IRB Protocol
TITLE:	Professionalism in physician assistant students
SUBMISSION TYPE:	New Study

On behalf of Butler's Institutional Review Board, I am pleased to inform you that your research has been registered as exempt as of the date of this memo. As such, there will be no further review of your protocol, and you are cleared to begin the procedures outlined in your protocol.

As an exempt study, there is no requirement for continuing review. Your protocol will remain on file with the IRB as a matter of record. Although your study is exempt from continuing review, you and your research team are not exempt from ethical research practices and should therefore employ all protections for your participants and their data which are appropriate to your project.

Please note the following conditions apply to all IRB approvals:
1. No subjects may be involved in any study procedure prior to the IRB approval date.

2. All unanticipated or serious adverse events must be reported to the Institute for Research and Scholarship within 5 days.

3. All protocol modifications must be IRB approved prior to implementation unless they are intended to reduce risk. This includes any change of investigator, or site address.

4. All protocol deviations must be reported to the IRB within 5 working days.

5. All recruitment materials and methods must be approved by the IRB prior to being used.

I offer my congratulations on your approval and wish you success on your research. Should you desire additional assistance or clarification, please call me at 9971 or email jmmarti1@butler.edu.

REFERENCES

1. Wong D, Nye K, Hollis P. Microbial flora on doctors' white coats. *BMJ*. 1991; 303: 1602-1604
2. Murphy C. Death of the doctor's white coat. *BBC News*. September 17, 2007. http://news.bbc.co.uk/2/hi/health/6998877.stm. Accessed November 14, 2012.
3. Brandt L. On the value of an old dress code in the new millennium. *Arch Intern Med*. 2003; 163; 1277-1281.
4. Jones WHS, trans. *Hippocrates*. Vol 2. Cambridge, Mass: Harvard University Press; 1923: 311-312.
5. Beach MC. White Coat Hype: Branding Physicians with Professional Attire. *JAMA*. 2013; 173 (6): 467-468. doi: 10.1001/jamainternmed.2013.3766
6. Tahmassebi D. Short Communications: Children's and parents' attitudes towards dentists' attire. *European Archives of Pediatric Dentistry*. 2009; 10(4): 237-240.
7. Landry M, Dornelles A, Hayek G, Deichmann R. Patient Preferences for Doctor Attire: The White Coat's Place in the Medical Profession. *The Ochsner Journal*. 2013; 13(3): 334-342.
8. Maruani A, Leger J, Giraudeau B, et al. Effect of physician dress style on patient confidence. *JEADV*. 2012; 27: 333-337. doi: 10.1111/j.1468-3083.2012.04665.x
9. Brosky M, Keefer O, Hodges J, Pesun I, Cook G. Patient Perceptions of Professionalism in Dentistry. *Journal of Dental Education*. 2003; 67(8): 909-

915.

10. Aitken A, Tinning C, Gupta S, Medlock G, Wood A, Aitken M. The importance of orthopaedic doctors' appearance. *The Surgeon*. 2013; 12: 40-46. doi:10.1016/j.surge.2013.07.002

11. Tahmassebi D. Short Communications: Children's and parents' attitudes towards dentists' attire. *European Archives of Pediatric Dentistry*. 2009; 10(4): 237-240.

12. Gjerdingen DK, Simpson DE. Physician's attitudes about their professional appearance. *Fam Pract Res J.* 1989; 9:57-64.

13. Behling D, Williams A. Influence of dress on perception of intelligence and expectations of scholastic achievement. *Clothing and Textiles Research Journal*. 1991; 9:1-7. doi: 10.1177/0887302X9100900401

14. Lennon SJ, Miller FG. Attire, physical appearance and first impressions: more is less. *Clothing and Textiles Research Journal*. 1984; 3(1):1-8.

15. Adam H, Galinsky A. Enclothed cognition. *Journal of Experimental Social Psychology*. 2012; 48:918-925. doi: 10.1016/j.jesp.2012.02.008